

10/586262

\*\*\*\*\* QUERY RESULTS \*\*\*\*\*  
(NARROW SEARCH)

⇒ d his l10

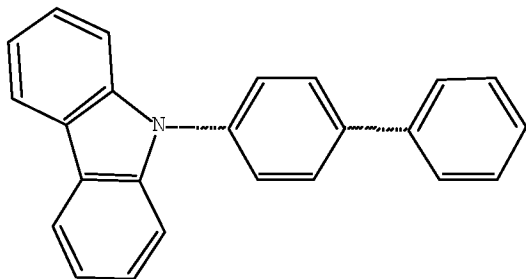
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SAVE TEMP L9 GAR262REGL3/A

FILE 'HCAPLUS' ENTERED AT 09:37:37 ON 23 SEP 2008

L10 1 S L9

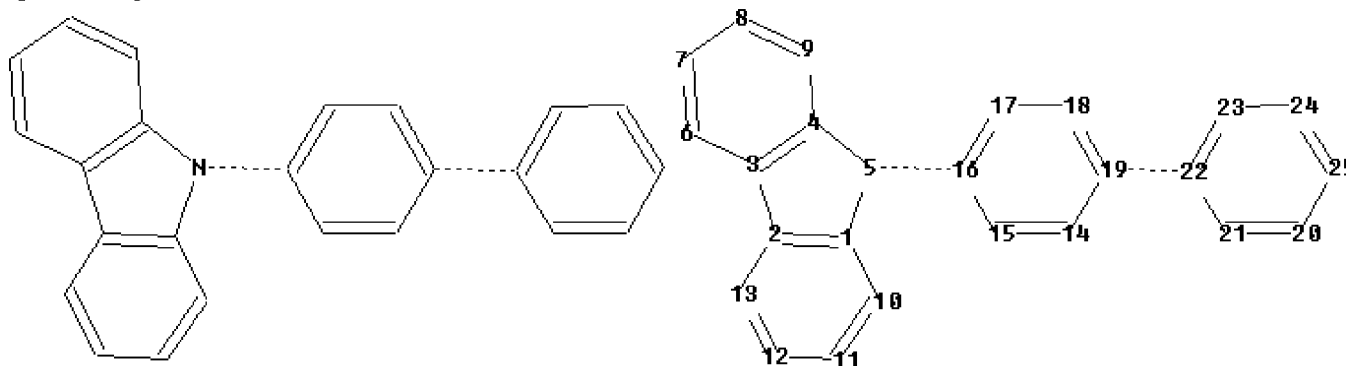
⇒ d que l10

L3 STR



Structure attributes must be viewed using STN Express query preparation:

Uploading L2.str



ring nodes :

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23  
24 25

chain bonds :

5-16 19-22

ring bonds :

1-2 1-5 1-10 2-3 2-13 3-4 3-6 4-5 4-9 6-7 7-8 8-9 10-11 11-12 12-13  
14-15 14-19 15-16 16-17 17-18 18-19 20-21 20-25 21-22 22-23 23-24 24-25

exact/norm bonds :

1-5 4-5 5-16 19-22

exact bonds :

2-3

normalized bonds :

1-2 1-10 2-13 3-4 3-6 4-9 6-7 7-8 8-9 10-11 11-12 12-13 14-15 14-19  
15-16 16-17 17-18 18-19 20-21 20-25 21-22 22-23 23-24 24-25

isolated ring systems :

10/586262

containing 1 : 14 : 20 :

Match level :

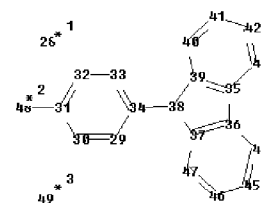
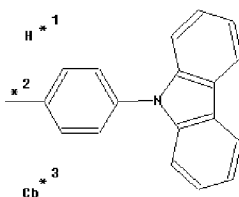
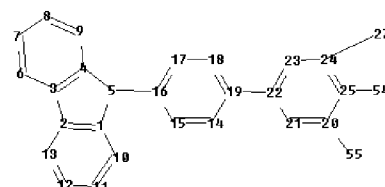
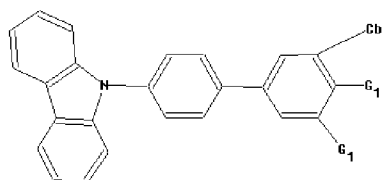
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom  
11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom  
20:Atom 21:Atom  
22:Atom 23:Atom 24:Atom 25:Atom

L6 642 SEA FILE=REGISTRY SSS FUL L3  
L7 STR

□ STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

Structure attributes must be viewed using STN Express query preparation:

Uploading L3.str



chain nodes :

27 28 48 49 54 55

ring nodes :

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23  
24 25 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47

chain bonds :

5-16 19-22 20-55 24-27 25-54 31-48 34-38

ring bonds :

1-2 1-5 1-10 2-3 2-13 3-4 3-6 4-5 4-9 6-7 7-8 8-9 10-11 11-12 12-13  
14-15 14-19 15-16 16-17 17-18 18-19 20-21 20-25 21-22 22-23 23-24 24-25  
29-30 29-34  
30-31 31-32 32-33 33-34 35-36 35-39 35-43 36-37 36-44 37-38 37-47 38-39  
39-40 40-41  
41-42 42-43 44-45 45-46 46-47

exact/norm bonds :

1-5 4-5 5-16 20-55 25-54 34-38 35-36 37-38 38-39

exact bonds :

2-3 19-22 24-27 31-48

normalized bonds :

# 10/586262

1-2 1-10 2-13 3-4 3-6 4-9 6-7 7-8 8-9 10-11 11-12 12-13 14-15 14-19  
 15-16 16-17 17-18 18-19 20-21 20-25 21-22 22-23 23-24 24-25 29-30 29-34  
 30-31 31-32  
 32-33 33-34 35-39 35-43 36-37 36-44 37-47 39-40 40-41 41-42 42-43 44-45  
 45-46 46-47  
 isolated ring systems :  
 containing 1 : 14 : 20 :

G1:[\*1],[\*2],[\*3]

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom  
 11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom  
 20:Atom 21:Atom  
 22:Atom 23:Atom 24:Atom 25:Atom 27:Atom 28:CLASS 29:Atom 30:Atom 31:Atom  
 32:Atom 33:Atom  
 34:Atom 35:Atom 36:Atom 37:Atom 38:Atom 39:Atom 40:Atom 41:Atom 42:Atom  
 43:Atom 44:Atom  
 45:Atom 46:Atom 47:Atom 48:CLASS 49:Atom 54:CLASS 55:CLASS  
 Generic attributes :  
 27:  
 Number of Carbon Atoms : 7 or more  
 49:  
 Number of Carbon Atoms : 7 or more

L9 1 SEA FILE=REGISTRY SUB=L6 SSS FUL L7  
 L10 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L9

⇒ d l10 ibib abs hitstr hitind

L10 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:905447 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:403232  
 TITLE: Electron transport agents for organic electronic devices  
 INVENTOR(S): Bentsen, James G.; Goplen, Nicholas P.; Li, Yingbo; Roberts, Ralph R.  
 PATENT ASSIGNEE(S): 3M Innovative Properties Company, USA  
 SOURCE: U.S. Pat. Appl. Publ., 88 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040214036	A1	20041028	US 2003-413653	20030415
US 7271406	B2	20070918		
WO 2004096948	A1	20041111	WO 2003-US32047	20031010

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ,

# 10/586262

OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
 TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,  
 FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,  
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2003287043 A1 20041123 AU 2003-287043 20031010  
 EP 1618169 A1 20060125 EP 2003-777563 20031010  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK  
 CN 1764708 A 20060426 CN 2003-80110259 20031010  
 JP 2006523611 T 20061019 JP 2004-571456 20031010  
 US 20080026135 A1 20080131 US 2007-836828 20070810  
 PRIORITY APPLN. INFO.: US 2003-413653 A 20030415  
 WO 2003-US32047 W 20031010

OTHER SOURCE(S): MARPAT 141:403232

AB Compds. Are described which comprise an aromatic core conjugated to end capping groups, the aromatic cores comprising (un)substituted phenylene group arylene or naphthalene group arylene having a pendant heteroaryl group that includes  $\geq 1$  -C=N- unit. Compns. Are also described which comprise 1 of the compds. And a second compound selected from a charge-transporting material, a charge blocking material, a light-emitting material, a color conversion material, a polymeric binder, or a combination of these. Organic electronic devices, especially organic electroluminescent devices, employing the compds. (e.g., as electron transport agents or in emissive layers) are also described. A method of making an organic electroluminescent device is described which entails preparing a donor sheet comprising a transfer layer that comprises the compound and transferring the transfer layer from the donor sheet to a receptor sheet, wherein the transfer layer forms at least part of a light emissive structure.

IT 785051-62-9

RL: DEV (Device component use); USES (Uses)

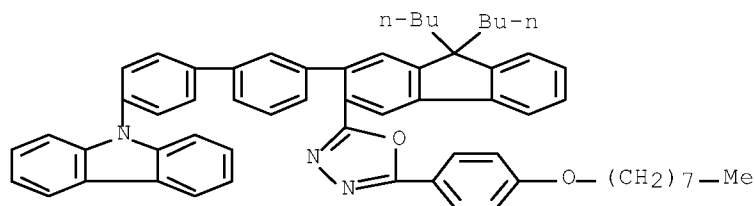
(compds. Based on end-capped aromatic cores with pendent heteroaryl groups and compns. Containing them and organic electronic devices using them and

organic

electroluminescent device fabrication)

RN 785051-62-9 HCAPLUS

CN 9H-Carbazole, 9-[3'-[9,9-dibutyl-3-[5-[4-(octyloxy)phenyl]-1,3,4-oxadiazol-2-yl]-9H-fluoren-2-yl][1,1'-biphenyl]-4-yl]- (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06

INCL 428690000; X42-891.7; X31-350.4; X31-350.6; X25-7 4.0; X25-230.116;  
 X25-230.135; X54-813.6; X54-814.3; X54-826.22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 27, 28, 76

**10/586262**

IT 785051-61-8 ~~785051-62-9~~ 785051-63-0

RL: DEV (Device component use); USES (Uses)

(compds. Based on end-capped aromatic cores with pendent heteroaryl groups  
and compns. Containing them and organic electronic devices using them and  
organic  
electroluminescent device fabrication)

REFERENCE COUNT: 160 THERE ARE 160 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE  
FORMAT

10/586262

\*\*\*\*\* QUERY RESULTS \*\*\*\*\*  
(BROAD SEARCH)

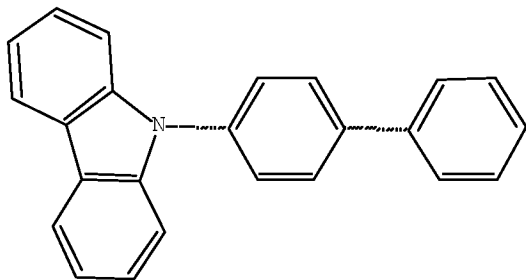
=> d his 125

(FILE 'HCAPLUS' ENTERED AT 09:54:18 ON 23 SEP 2008)

L25 16 S L24

=> d que 125

L3 STR



Structure attributes must be viewed using STN Express query preparation:

Uploading L2.sr

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L15	611271	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	BIPHENYL?
L21	3158	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	QUATERPHENYL?
L22	612	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	L6 NOT L21
L23	642279	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	L13 OR L15 OR L22
L24	19	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	L6 NOT L23
L25	16	SEA	FILE=HCAPLUS	ABB=ON	PLU=ON	L24

=> d 125 1-16 ibib abs hitstr hitind

T

L25 ANSWER 1 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:1093372 HCAPLUS Full-text

DOCUMENT NUMBER: 147:550734

TITLE: Bipolar host materials for green triplet emitter in organic light-emitting diodes

AUTHOR(S): Jeon, Ji Young; Park, Tae Jin; Jeon, Woo Sik; Park, Jung Joo; Jang, Jin; Kwon, Jang Hyuk; Lee, Jae Yeol

CORPORATE SOURCE: Research Institute for Basic Sciences and Department of Chemistry & Department of Life and Nanopharmaceutical Science, Kyung Hee University, Seoul, 130-701, S. Korea

SOURCE: Chemistry Letters (2007), 36(9), 1156-1157  
CODEN: CMLTAG; ISSN: 0366-7022

PUBLISHER: Chemical Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 147:550734

AB The authors have developed novel bipolar host materials for high efficiency green phosphorescent OLEDs (PHOLEDs). Ph moieties were inserted in a 9,9'-

(biphenyl-4,4'-diyl)dicarbazole (CBP) compound to provide much easier electron injection and to increase electron mobility. The efficiency increase and voltage reduction by this modification were observed in green PHOLEDs. At a given constant luminance of 1000 cd/m<sup>2</sup>, the power efficiency was enhanced about 20% in the general green PHOLED devices.

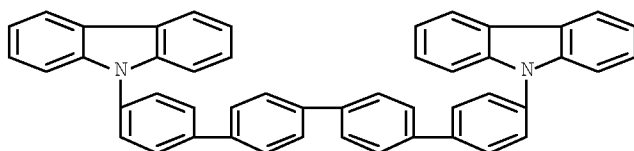
IT 956833-71-9P

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(bipolar host materials for green triplet emitter in organic light-emitting diodes)

RN 956833-71-9 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1':4',1'':4'',1'''-quaterphenyl]-4,4'''-diylbis-  
(CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 58328-31-7P, CBP 208838-20-4P 956833-71-9P

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(bipolar host materials for green triplet emitter in organic light-emitting diodes)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 2 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:1089972 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 147:416346

TITLE: Organic electroluminescence element, display device, and illumination device

INVENTOR(S): Yasukawa, Noriko; Katoh, Eisaku; Otsu, Shinya; Suzuri, Yoshiyuki; Sugita, Shuichi; Kita, Hiroshi; Nakata, Aki

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: PCT Int. Appl., 114pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007108327	A1	20070927	WO 2007-JP54540	20070308
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,				

10/586262

IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF,  
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW,  
GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,  
BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: JP 2006-74176 A 20060317  
JP 2006-137499 A 20060517

OTHER SOURCE(S): MARPAT 147:416346

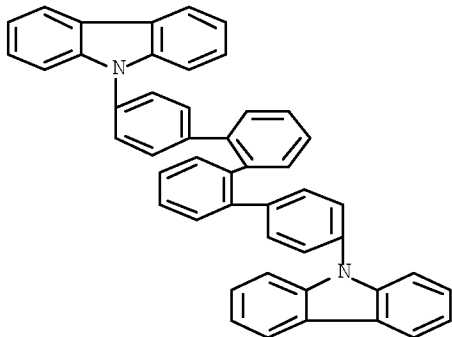
AB First, a long lifetime organic EL element emitting a blue phosphorescence is provided, and second, a long lifetime organic EL element and illumination and display devices using the organic EL element are provided. These organic EL elements are light emitting layers having an electrode and at least one organic layer on a substrate, and at least one of the organic layers contains a host compound and a phosphorescent compound. In the first element, the host compound has a HOMO of -5.42 eV to -3.50 eV and a LUMO of -1.20 eV to +0.00 eV and the phosphorescent compound has a HOMO of -5.15 eV to -3.50 eV and a LUMO of -1.25 eV to +1.00 eV. In the second element, the phosphorescent compound has a HOMO of -5.15 eV to -3.50 eV and a LUMO of -1.25 eV to +1.00 eV and the hole-transporting host compound has a triplet excitation energy (T1) of 2.7 eV or more.

IT 858131-70-1

RL: TEM (Technical or engineered material use); USES (Uses)  
(host compound for organic electroluminescent element of display devices)

RN 858131-70-1 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1':2',1'':2'',1'''-quaterphenyl]-4,4'''-diylbis-  
(CA INDEX NAME)



CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73, 76

IT 92899-33-7 139092-78-7 405171-87-1 604785-54-8 765943-90-6  
769954-74-7 848724-48-1 858131-70-1 862896-05-7  
935660-15-4 942502-09-2 950765-97-6 950834-64-7 950834-69-2  
951209-14-6 951209-15-7 951209-16-8

RL: TEM (Technical or engineered material use); USES (Uses)  
(host compound for organic electroluminescent element of display devices)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 3 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:534318 HCAPLUS Full-text

DOCUMENT NUMBER: 146:531298

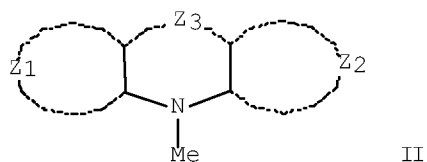
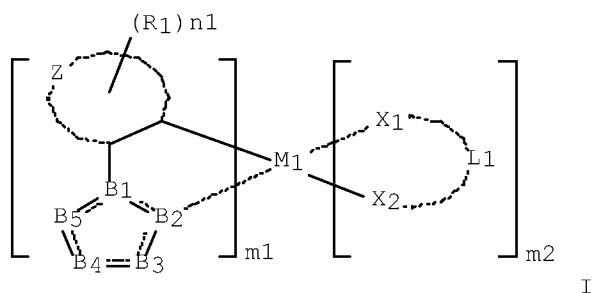
TITLE: Organic electroluminescent elements with excellent  
emission efficiency and durability and displays and



lighting apparatus using them  
 INVENTOR(S): Sugita, Shuichi  
 PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 45pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007123392	A	20070517	JP 2005-310975	20051026
PRIORITY APPLN. INFO.:			JP 2005-310975	20051026
OTHER SOURCE(S):	MARPAT	146:531298		

GI



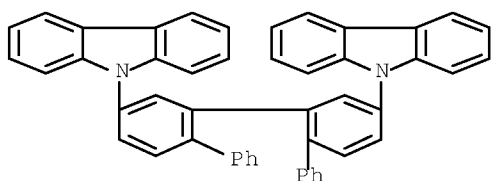
AB The elements contain phosphors I (R1 = substituent; Z = 5- to 7-membered ring-forming nonmetallic atomic group; n1 = 0-5; B1-5 = C, N, O, S;  $\geq 1$  of B1-5 = N; M1 = Group VIIIB metal; X1,2 = C, N, O; L1 = atomic group forming bidentate ligand with X1 and X2; m1 = 1-3; m2 = 0-2; m1 + m2 = 2,3) in light-emitting layers and di-Ph compds. A1Q1Q2A2 [A1 = R3n3-substituted 1,3-phenylene; Q2 = R4n4-substituted 1,3-phenylene; n3, n4 = 0-3; A1,2 = II; Z1,2 = (un)substituted aromatic heterocyclic or hydrocarbon ring; Z3 = divalent linking group] in  $\geq 1$  layers, including the light-emitting layers, between pairs of electrodes.

IT 936348-67-3

RL: TEM (Technical or engineered material use); USES (Uses)  
 (host or hole-blocking material; organic electroluminescent elements containing certain phosphors with good emission efficiency and durability for displays and lighting apparatus)

RN 936348-67-3 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1':2',1'':2'',1''':-quaterphenyl]-4',5''-diylbis-  
 (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73  
 IT 342638-54-4 936348-50-4 936348-51-5 936348-53-7 936348-55-9  
 936348-57-1 936348-59-3 936348-61-7 936348-63-9 936348-65-1  
~~936348-67-3~~ 936348-69-5 936348-71-9 936348-73-1  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (host or hole-blocking material; organic electroluminescent elements containing certain phosphors with good emission efficiency and durability for displays and lighting apparatus)

L25 ANSWER 4 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:221306 HCAPLUS Full-text

DOCUMENT NUMBER: 146:368306

TITLE: Syntheses and properties of novel quarterphenylene-based materials for blue organic light-emitting devices

AUTHOR(S): Agata, Yuya; Shimizu, Hitoshi; Kido, Junji

CORPORATE SOURCE: Optoelectronic Industry and Technology Development Association, 1-20-10 Sekiguchi, Bunkyo-ku, Tokyo, 112-0014, Japan

SOURCE: Chemistry Letters (2007), 36(2), 316-317  
 CODEN: CMLTAG; ISSN: 0366-7022

PUBLISHER: Chemical Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 146:368306

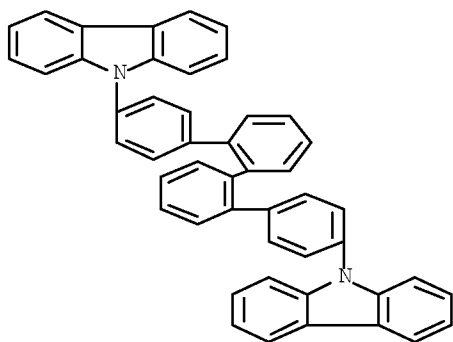
AB A series of quarterphenylene-based compds. were prepared and investigated as the hole-transport layer and the host materials in organic light-emitting devices (OLEDs). These compds. have wide HOMO-LUMO energy gaps (ca. 3.57 eV) due to the twisted backbone. A maximum external efficiency of 17% was achieved for blue organic light-emitting device using iridium(III)-bis[2-(4,6-difluorophenyl)pyridinate-N,C2'] picolinate (Flrpic) as an emitting material.

IT ~~858131-70-1P~~

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (syntheses and properties of quarterphenylene compds. for hole-transport layer and emitting layer host material in blue-emitting OLEDs)

RN 858131-70-1 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1':2',1'':2'',1'''-quaterphenyl]-4,4'''-diylbis-  
 (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 IT 858131-70-1P 869357-87-9P 869357-88-0P 869357-89-1P  
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (syntheses and properties of quarterphenylene compds. for hole-transport layer and emitting layer host material in blue-emitting OLEDs)  
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 5 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2007:148714 HCAPLUS Full-text  
 DOCUMENT NUMBER: 146:430845  
 TITLE: Organic light-emitting diode (OLED) and its application to lighting devices  
 AUTHOR(S): Ide, Nobuhiro; Komoda, Takuya; Kido, Junji  
 CORPORATE SOURCE: Advanced Technologies Development Laboratory, Matsushita Electric Works, Ltd., 1048 Kadoma, Osaka, 571-8686, Japan  
 SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2006), 6333(Organic Light Emitting Materials and Devices X), 63330M/1-63330M/10 CODEN: PSISDG; ISSN: 0277-786X  
 PUBLISHER: SPIE-The International Society for Optical Engineering  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Organic Light Emitting Diode (OLED) is an emerging technol. as one of the strong candidates for next generation solid state lighting with various advantages such as thin flat shape, no UV emission and environmental benefits. At this moment, OLED still has a lot of issues to be solved before widely used as lighting devices. Nonetheless, typical properties of OLED, such as efficiency and lifetime, have been recently made great progress. For example, a green phosphorescent OLED with over 100 lm/W and a red fluorescent OLED with an estimated half decay time of over 100,000 h at 1,000 cd/m<sup>2</sup> were reported. Large area, white OLEDs with long lifetime were also demonstrated. In this way, some of the issues are going to be steadily overcome. In this publication, we will present a phosphorescent white OLED with a high luminous efficiency of 46 lm/W and an external quantum efficiency of 20.6 percent observed at 100 cd/m<sup>2</sup>. This device achieves a luminous efficiency of 62.8 lm/W with a light-outcoupling film attached on the glass substrate. This is one of the highest values so far reported for white OLEDs. And we will also show a color-tunable stacked OLED with improved emission characteristics. This device minimizes a viewing angle dependence of the emission spectra and

has color tunability from white to reddish-white. These technologies will be applied to OLED lighting.

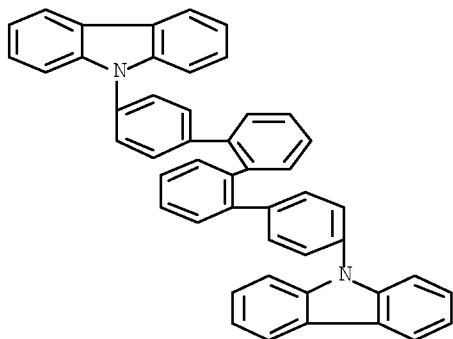
IT 858131-70-1

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(organic light emitting diode and its application to lighting devices)

RN 858131-70-1 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1':2',1'':2'',1'''-quaterphenyl]-4,4'''-diylbis-  
(CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 376367-93-0, FIRpic 435294-03-4 858131-70-1 861846-13-1

921205-02-9 921205-03-0

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(organic light emitting diode and its application to lighting devices)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 6 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:125348 HCAPLUS Full-text

DOCUMENT NUMBER: 146:389982

TITLE: High luminous efficiency blue organic light-emitting devices using high triplet excited energy materials

AUTHOR(S): Tanaka, Daisaku; Agata, Yuya; Takeda, Takashi; Watanabe, Soichi; Kido, Junji

CORPORATE SOURCE: Optoelectronic Industry and Technology Development Association (OITDA), Bunkyo-ku, Tokyo, 112-0014, Japan  
SOURCE: Japanese Journal of Applied Physics, Part 2: Letters & Express Letters (2007), 46(4-7), L117-L119  
CODEN: JAPLD8

PUBLISHER: Japan Society of Applied Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The authors succeeded to fabricate highly efficient blue organic light-emitting devices (OLEDs) by using a phosphorescent emitter, Ir(III) bis[(4,6-di-fluorophenyl)-pyridinate-N,C2']picolinate, and high triplet energy materials as the host and the carrier transport materials. A high power efficiency of 39 lm/W and external quantum efficiency of 21% were obtained at 100 cd/m<sup>2</sup>.

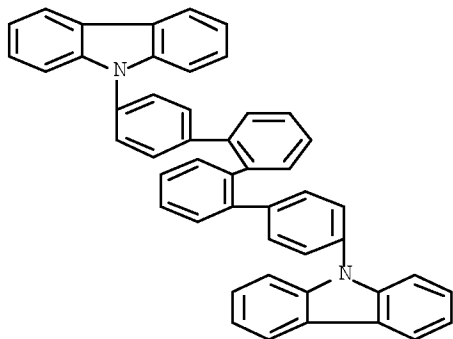
IT 858131-70-1

RL: PRP (Properties); TEM (Technical or engineered material use); USES

(Uses)

(high luminous efficiency blue organic light-emitting devices using high triplet excited energy materials)

RN 858131-70-1 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1':2',1'':2'',1'''-quaterphenyl]-4,4'''-diylbis-  
(CA INDEX NAME)

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 7429-90-5, Aluminum, properties 7789-24-4, Lithium fluoride, properties  
24964-91-8 220930-43-8 376367-93-0, Firpic 858131-70-1  
861846-13-1 929203-02-1RL: PRP (Properties); TEM (Technical or engineered material use); USES  
(Uses)

(high luminous efficiency blue organic light-emitting devices using high triplet excited energy materials)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:632732 HCAPLUS Full-text

DOCUMENT NUMBER: 145:103546

TITLE: Preparation of biscarbazole derivatives as  
charge-transporting materials, and organic  
electroluminescent elements

INVENTOR(S): Yabe, Masayoshi; Sato, Hideki

PATENT ASSIGNEE(S): Pioneer Corporation, Japan; Mitsubishi Chemical  
Corporation

SOURCE: PCT Int. Appl., 137 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 2006067976	A1	20060629	WO 2005-JP22635	20051209
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,				
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,				
GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ,				
LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ,				
NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,				

# 10/586262

SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,  
YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,  
CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
KG, KZ, MD, RU, TJ, TM

JP 2006199679 A 20060803 JP 2005-355790 20051209

EP 1829871 A1 20070905 EP 2005-814748 20051209

R: DE

CN 101087776 A 20071212 CN 2005-80044718 20051209

KR 2007090952 A 20070906 KR 2007-714364 20070622

US 20080145699 A1 20080619 US 2007-722760 20070625

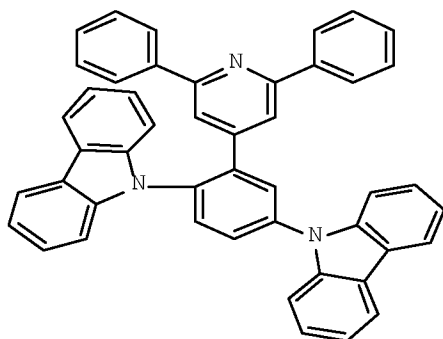
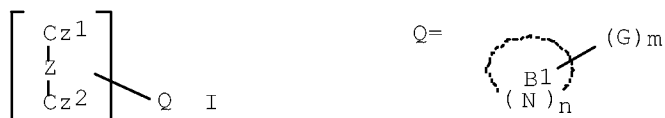
PRIORITY APPLN. INFO.:

JP 2004-373981 A 20041224

WO 2005-JP22635 W 20051209

OTHER SOURCE(S): CASREACT 145:103546; MARPAT 145:103546

GI



III

AB Organic compds. represented by the following formula [I; Cz1, Cz2 = carbazolyl; Z = a direct bond or any connecting group which enables the nitrogen atom of the carbazole ring in Cz1 to be conjugated with the nitrogen atom of the carbazole ring in Cz2; Q = a direct bond connected to G in the following formula Q1; ring B1 = a 6-membered aromatic heterocycle having n nitrogen atom(s) as a heteroatom, provided that n is an integer of 1-3; G is connected to Q, it is a direct bond or any connecting group which each is connected to Q; G is bonded to any of the carbon atoms located in the ortho and para positions to a nitrogen atom of the ring B1; when G is not connected to Q, it is an aromatic hydrocarbon group; m = an integer of 3-5] are prepared These compds. combines excellent hole-transporting properties with excellent electron-transporting properties and has excellent long-term resistance to elec. oxidation/reduction and a high triplet excitation level. A charge-transporting material and an organic electroluminescent element which comprise or employ the organic compound I are also disclosed. Thus, aldol condensation of 2,5-difluorobenzaldehyde with acetophenone in a mixture of concentrated H2SO4 and THF at 35° for 7 h gave 1-phenyl-3-(2,5-difluorophenyl)-2-propen-1-

one which underwent cyclocondensation with 1-phenacylpyridinium bromide and ammonium acetate in a mixture of AcOH and DMF under refluxing for 6 h to give 4-(2,5-difluorophenyl)-2,6-diphenylpyridine (II). Carbazole was treated with NaH in DMF at 80° for 60 min and condensed with II under refluxing for 3 h to give 4-[2,5-bis(carbazol-9-yl)phenyl]-2,6-diphenylpyridine (III). An electroluminescent device with a luminescent layer comprising III as a main component (host material) showed excellent life property (working life of 1.00 at 2.500 cd/m<sup>2</sup>).

IT 895147-31-6P

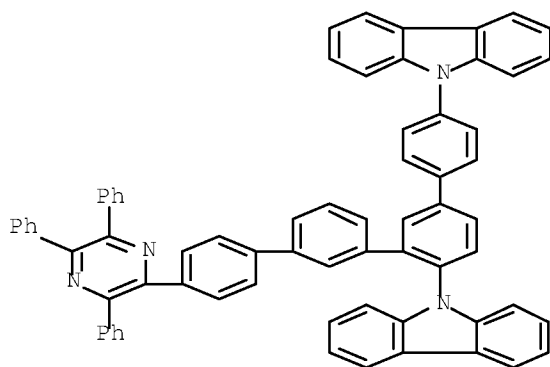
RL: DEV (Device component use); SPN (Synthetic preparation); TEM

(Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of biscarbazole derivs. as charge-transporting materials, and organic electroluminescent elements)

RN 895147-31-6 HCAPLUS

CN 9H-Carbazole, 9,9'-[4'''-(triphenylpyrazinyl)[1,1':3',1'':3'',1'''-quaterphenyl]-4,4'-diyl]bis- (9CI) (CA INDEX NAME)



CC 27-11 (Heterocyclic Compounds (One Hetero Atom))

Section cross-reference(s): 28, 73

IT	895146-40-4P	895146-42-6P	895146-44-8P	895146-46-0P	895146-48-2P
	895146-50-6P	895146-52-8P	895146-54-0P	895146-56-2P	895146-58-4P
	895146-60-8P	895146-62-0P	895146-64-2P	895146-66-4P	895146-68-6P
	895146-70-0P	895146-72-2P	895146-74-4P	895146-77-7P	895146-79-9P
	895146-81-3P	895146-83-5P	895146-85-7P	895146-87-9P	895146-89-1P
	895146-91-5P	895146-93-7P	895146-95-9P	895146-98-2P	895147-00-9P
	895147-02-1P	895147-04-3P	895147-06-5P	895147-07-6P	895147-08-7P
	895147-10-1P	895147-12-3P	895147-14-5P	895147-16-7P	895147-18-9P
	895147-19-0P	895147-20-3P	895147-22-5P	895147-24-7P	895147-25-8P
	895147-27-0P	895147-29-2P	895147-31-6P	895147-33-8P	
	895147-34-9P	895147-35-0P	895147-37-2P	895147-38-3P	895147-40-7P
	895147-42-9P	895147-45-2P	895147-46-3P	895147-48-5P	895147-49-6P
	895147-51-0P	895147-54-3P	895147-56-5P	895147-58-7P	895147-59-8P
	895147-60-1P	895147-61-2P	895147-62-3P	895147-63-4P	895147-64-5P
	895147-65-6P	895147-67-8P			

RL: DEV (Device component use); SPN (Synthetic preparation); TEM

(Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of biscarbazole derivs. as charge-transporting materials, and organic electroluminescent elements)

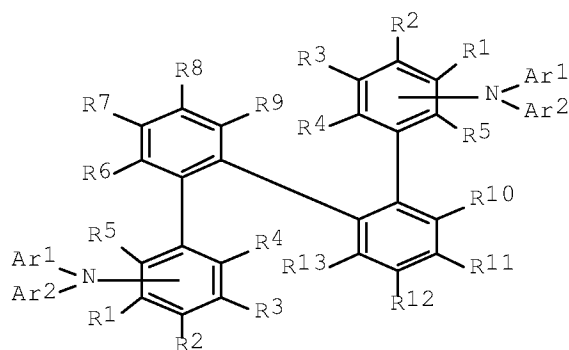
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

10/586262

ACCESSION NUMBER: 2005:1218122 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:485565  
TITLE: New quarterphenylene derivative used as host material  
and hole transport material in organic  
electroluminescent device  
INVENTOR(S): Kido, Junji; Shimizu, Kazushi; Agata, Hiroya; Tanaka,  
Daisaku  
PATENT ASSIGNEE(S): Chemipro Kasei Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 110 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005320277	A	20051117	JP 2004-139202	20040507
PRIORITY APPLN. INFO.:			JP 2004-139202	20040507
OTHER SOURCE(S):	MARPAT	143:485565		

GI

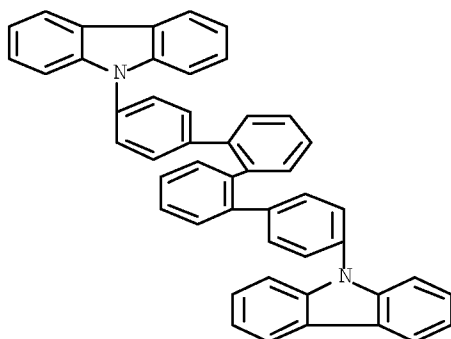


AB Disclosed is a new quarterphenylene derivative used as a host material for a phosphorescent substance and a hole transport material in an organic electroluminescent device, represented by I [R1-13 = H, alkyl, alkoxy, aryl, and halo; one of R1-5 = -N(Ar1)(Ar2) [Ar1 and Ar2 = aryl, heteroaryl, and may combined to form heteroaryl]].

IT 858131-70-1P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(quarterphenylene derivative used as host material and hole transport material in organic electroluminescent device)

RN 858131-70-1 HCAPLUS  
CN 9H-Carbazole, 9,9'-[1,1':2',1'':2'',1'''-quaterphenyl]-4,4'''-diylbis-  
(CA INDEX NAME)



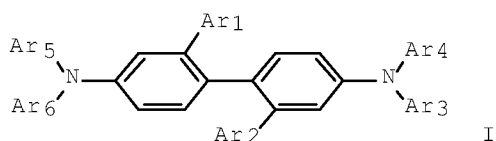


IC ICM C07C211-54  
ICS C07D209-86; C09K011-06; H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25  
IT 858131-70-1P 869357-87-9P 869357-88-0P 869357-89-1P  
869357-90-4P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(quarterphenylene derivative used as host material and hole transport material in organic electroluminescent device)

L25 ANSWER 9 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2005:1155213 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:413223  
TITLE: Electroluminescent hole-transporting organic materials of high thermal stability and their use in electroluminescent device  
INVENTOR(S): Leung, Man-Kit; Lin, Hsien-Chang; Chou, Meng-Yen; Wang, Shen-Shen; Yang, Kuei-Hui  
PATENT ASSIGNEE(S): Ritdisplay Corporation, Taiwan  
SOURCE: U.S. Pat. Appl. Publ., 19 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 20050236976	A1	20051027	US 2004-24798	20041230
TW 228017	B	20050211	TW 2003-92137789	20031231
CN 1796487	A	20060705	CN 2004-10104466	20041229
PRIORITY APPLN. INFO.:			TW 2003-92137789	A 20031231
OTHER SOURCE(S):	MARPAT	143:413223		

GI



AB The present invention relates to an organic electroluminescent device, comprising a first electrode, an organic luminescent layer and a second electrode disposed over a substrate. The organic electroluminescent layer comprises compound of formula (I), wherein Ar1-Ar6 are individual hydrogen, substituted or unsubstituted C1-6 alkyl, substituted or unsubstituted C3-6 cycloalkyl, substituted or unsubstituted C3-10 alkenyl, substituted or unsubstituted C6-40 aromatic amino, substituted or unsubstituted C6-40 aromatic, substituted or unsubstituted C6-40 polycyclic aromatic, or substituted or unsubstituted C6-40 aralkyl. The hole-transporting organic compds. were synthesized based on 2,2'-diiodo-4,4'-dinitrobiphenyl. The electroluminescent device consists of (1) a 100-nm transparent glass substrate, (2) the 110-nm first electrode (ITO), (3) a 60-nm hole-transporting layer formed by evaporation of a hole-transporting organic material, (4) a 25-nm organic luminescent layer formed by co-evaporation with Alq3 and DCJTB, (5) Alq3 electron-transporting layer, (6) LiF (1.2 nm) and Al (150 nm) as the second electrode, and (7) an air-tight protecting membrane. The electroluminescent device emits red light under DC driving. The brightness is 1447 cd/m<sup>2</sup> under 9 V, and the efficiency is 1.24 cd/A.

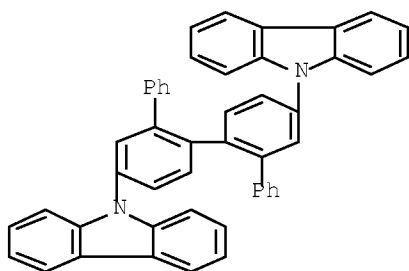
IT 867254-62-4

RL: DEV (Device component use); USES (Uses)

(electroluminescent hole-transporting organic materials of high thermal stability and their use in electroluminescent device)

RN 867254-62-4 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1':2'',1'':2'',1'''-quaterphenyl]-4'',5'-diylbis-(9CI) (CA INDEX NAME)



IC ICM H01J001-62

ICS H01J063-04; C07D043-02; C07C211-54

INCL 313504000; 564434000; 548440000

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 2085-33-8, Alq3 7429-90-5, Aluminum, uses 7440-22-4, Silver, uses 7440-70-2, Calcium, uses 7789-24-4, Lithium fluoride, uses 37197-42-5 37271-44-6 50926-11-9, ITO 200052-70-6, DCJTB 867254-58-8 867254-60-2 867254-62-4 867254-64-6 867254-66-8

## 10/586262

867254-68-0 867254-70-4 867254-73-7 867254-74-8 867254-77-1

RL: DEV (Device component use); USES (Uses)

(electroluminescent hole-transporting organic materials of high thermal stability and their use in electroluminescent device)

L25 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2005:1004849 HCAPLUS Full-text

DOCUMENT NUMBER: 143:295331

TITLE: Organic electroluminescent material used for organic electroluminescent device

INVENTOR(S): Ikeda, Kiyoshi; Tomita, Seiji; Arakane, Takashi; Ito, Mitsunori

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 76 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005085387	A1	20050915	WO 2005-JP3783	20050304
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
EP 1724323	A1	20061122	EP 2005-720055	20050304
R:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR			
CN 1934213	A	20070321	CN 2005-80007533	20050304
IN 2006CN03250	A	20070706	IN 2006-CN3250	20060907
KR 2007030759	A	20070316	KR 2006-718427	20060908
US 20070190355	A1	20070816	US 2007-591908	20070118
PRIORITY APPLN. INFO.:			JP 2004-64004	A 20040308
			WO 2005-JP3783	W 20050304

OTHER SOURCE(S): MARPAT 143:295331

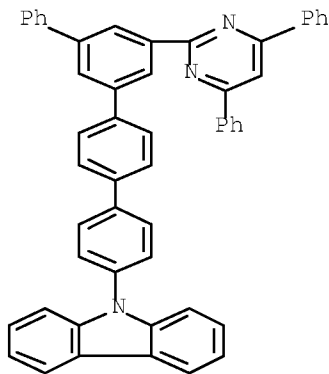
AB A material for organic electroluminescent (EL) device, comprising a compound of specified structure having a nitrogenous ring. Further, there is provided an organic EL device comprising a neg. electrode and a pos. electrode and, interposed there-between, one or two or more organic thin-film layers including at least a light-emitting layer, wherein at least one of the organic thin-film layers contains the above material for organic EL device. The above device containing the material is capable of realizing high luminous efficiency and thermostability and prolonged service life.

IT 864377-49-1P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(organic electroluminescent material used for organic electroluminescent device)

RN 864377-49-1 HCAPLUS

CN 9H-Carbazole, 9-[5'-(4,6-diphenyl-2-pyrimidinyl)[1,1':3',1'':4'',1'''-quaterphenyl]-4'''-yl]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
ICS C07D239-26; C07D401-14; C07D403-10; H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 22  
IT 864377-49-1P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(organic electroluminescent material used for organic electroluminescent device)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 11 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:612412 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 143:142459

TITLE: Material for organic electroluminescent device and organic electroluminescent device using it

INVENTOR(S): Iwakuma, Toshihiro; Kawamura, Hisayuki; Ikeda, Hidetsugu; Hosokawa, Chishio; Arakane, Takashi; Nakamura, Hiroaki

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 103 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005063920	A1	20050714	WO 2004-JP19727	20041224
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

# 10/586262

EP 1698679 A1 20060906 EP 2004-808077 20041224  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS  
 CN 1918260 A 20070221 CN 2004-80041937 20041224  
 US 20070128467 A1 20070607 US 2006-584262 20060626  
 IN 2006CN02336 A 20070706 IN 2006-CN2336 20060626  
 PRIORITY APPLN. INFO.: JP 2003-432759 A 20031226  
 WO 2004-JP19727 W 20041224

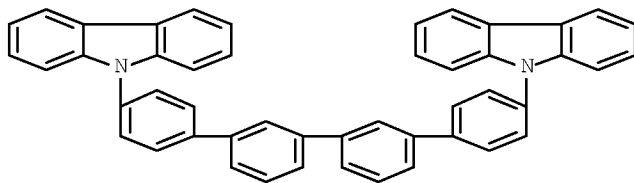
AB Disclosed is a material for organic electroluminescent devices which is composed of a compound having a specific structure. Also disclosed is an organic electroluminescent device which comprises an organic thin film layer composed of one or more layers including at least a light-emitting layer and interposed between a cathode and an anode, wherein at least one layer of the organic thin film layer contains the material for organic electroluminescent devices. The material for organic electroluminescent devices enables to provide an organic electroluminescent device having a high luminous efficiency, excellent heat resistance and long life while having no pixel defects. Also disclosed is an organic electroluminescent device using such a material for organic electroluminescent devices.

IT 858131-69-8P 858131-70-1P 858131-71-2P  
 858131-74-5P 858131-75-6P 858131-79-0P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (material for organic electroluminescent device and organic electroluminescent device using it)

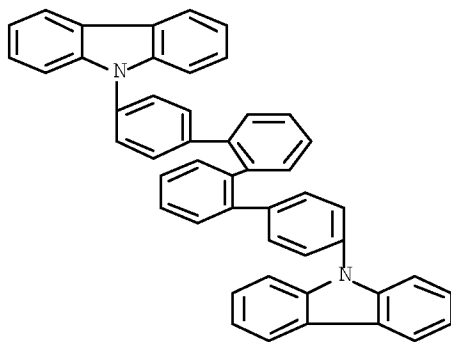
RN 858131-69-8 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1':3',1'':3'',1'''-quaterphenyl]-4,4'''-diylbis-  
 (9CI) (CA INDEX NAME)



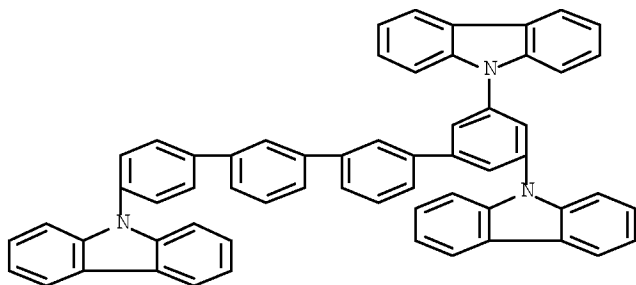
RN 858131-70-1 HCAPLUS

CN 9H-Carbazole, 9,9'-[1,1':2',1'':2'',1'''-quaterphenyl]-4,4'''-diylbis-  
 (CA INDEX NAME)



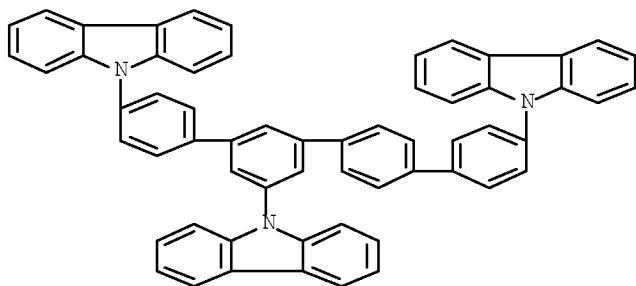
RN 858131-71-2 HCAPLUS

CN 9H-Carbazole, 9,9',9'''-[1,1':3',1'':3'',1'''-quaterphenyl]-3,4''',5-triyltris- (9CI) (CA INDEX NAME)



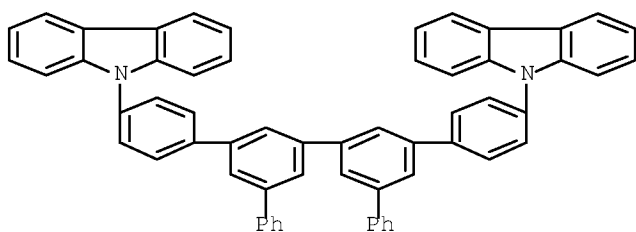
RN 858131-74-5 HCAPLUS

CN 9H-Carbazole, 9,9',9'''-[1,1':4',1'':4'',1'''-quaterphenyl]-3,4''',5-triyltris- (9CI) (CA INDEX NAME)



RN 858131-75-6 HCAPLUS

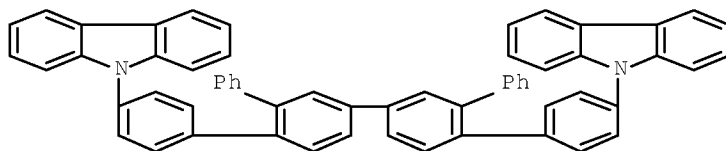
CN 9H-Carbazole, 9,9'-(5,5'-diphenyl[1,1':3',1'':3'',1'''-quaterphenyl]-4,4'''-diyl)bis- (9CI) (CA INDEX NAME)



RN 858131-79-0 HCAPLUS

CN 9H-Carbazole, 9,9'-(2',3'''-diphenyl[1,1':4',1'':4'',1'''-quaterphenyl]-

4,4'''-diyl)bis- (9CI) (CA INDEX NAME)

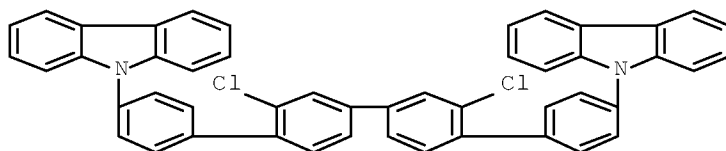


IT 858131-78-9P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(material for organic electroluminescent device and organic electroluminescent device using it)

RN 858131-78-9 HCAPLUS

CN 9H-Carbazole, 9,9'-(2',3''-dichloro[1,1':4',1'':4'',1'''-quaterphenyl])-4,4'''-diyl)bis- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

IT 858131-69-8P 858131-70-1P 858131-71-2P

858131-74-5P 858131-75-6P 858131-79-0P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(material for organic electroluminescent device and organic electroluminescent device using it)

IT 212385-73-4P 750573-24-1P 750573-26-3P 854952-44-6P 854952-47-9P

854952-51-5P 854952-52-6P 854952-53-7P 858131-72-3P 858131-73-4P

858131-76-7P 858131-77-8P 858131-78-9P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(material for organic electroluminescent device and organic electroluminescent device using it)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:283960 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 142:344890

TITLE: Organic electroluminescent element, illuminator, display and compound

INVENTOR(S): Ueda, Noriko; Yamada, Taketoshi; Kita, Hiroshi; Fukuda, Mitsuhiro

# 10/586262

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 64 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050069729	A1	20050331	US 2004-946499	20040921
JP 2005129478	A	20050519	JP 2004-34774	20040212
WO 2005039246	A1	20050428	WO 2004-JP14307	20040922

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

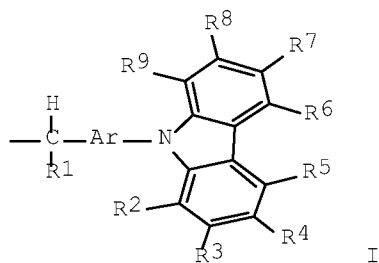
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1679940	A1	20060712	EP 2004-773481	20040922
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PRIORITY APPLN. INFO.: JP 2003-339583 A 20030930  
 WO 2004-JP14307 W 20040922

OTHER SOURCE(S): MARPAT 142:344890  
 GI



AB The invention refers to an organic electroluminescent element comprising a light emission layer and a hole blocking layer adjacent to the light emission layer, wherein, (i) the light emission layer contains a compound having a specified partial structure I [Ar = aryl or heteroaryl; R2-9 = H, or substituent, and groups may be combined with each other to form a ring; R1 = H, alkyl or cycloalkyl] and having a mol. weight of ≤1700; and (ii) the hole blocking layer contains a derivative selected from the group consisting of a styryl derivative, a B derivative and a carboline derivative

IT 848724-62-9

RL: DEV (Device component use); USES (Uses)

(organic electroluminescent containing carbazole derivative in emissive layer, and

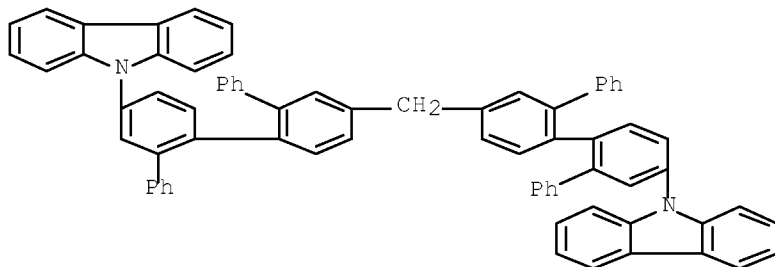


**10/586262**

styryl, boron or carboline derivative in hole blocking layer)

RN 848724-62-9 HCAPLUS

CN 9H-Carbazole, 9,9'-[methylenebis([1,1':2',1'''-quaterphenyl]-5',4''-diyl)]bis- (9CI) (CA INDEX NAME)



IC ICM H05B033-12

INCL 428690000; 428917000; 313504000; 313506000; 257088000; 349069000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 135804-06-7 142289-08-5 156645-72-6 492446-89-6 492446-97-6

787582-73-4      848724-46-9      848724-47-0      848724-48-1      848724-49-2

848724-50-5      848724-51-6      848724-52-7      848724-53-8      848724-54-9

848724-55-0      848724-56-1      848724-57-2      848724-58-3      848724-59-4

848724-60-7      848724-61-8    ~~848724-62-9~~      848724-63-0

848724-64-1      848724-65-2      848724-66-3      848724-67-4

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RL: DEV (Device component use); USES (Uses)
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(organic electroluminescent containing carbazole derivative in emissive layer, and

styryl, boron or carboline derivative in hole blocking layer)

L25 ANSWER 13 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:281222 HCAPLUS Full-text

DOCUMENT NUMBER: 142:363435

TITLE: Organic electroluminescent devices containing specific biphenyl compounds and LCD therewith

INVENTOR(S) : Fukuda, Mitsuhiro; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 50 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND

DATE \_\_\_\_\_

APPLICATION NO.

DATE \_\_\_\_\_

JP 2005085658

A

20050331

JP 2003-317930

20030910

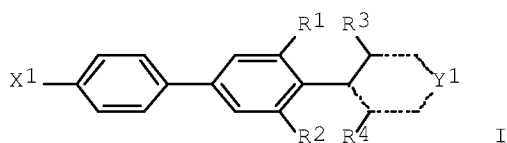
PRIORITY APPLN. INFO.:

JP 2003-317930

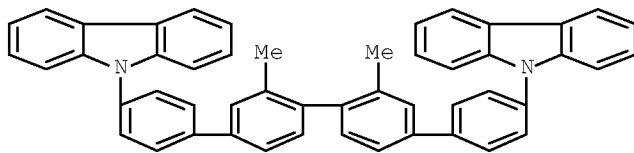
20030910

OTHER SOURCE(S): MARPAT 142:363435

GI



- AB The devices contain, in one or more of organic compound layers, compds. I [X1 = Q1 or Q2 [Z1, Z2 = C: or C(R7): (R7 = H, substituent); R5, R6 = H, substituent; Ar1, Ar2 = aromatic group]; Y1 = 6-membered aromatic ring substituted with X1; R1-R4 = H, substituent (R1 = R2 = R3 = R4 ≠ H)], X2-p-C6H4-m-C6H4L2X'2 (X2, X'2 = the same as X1; L2 = heterocycle, O-containing bivalent linking group), and/or X3-p-C6H4-C6H4L3CR8R9L'3X'3 [X3, X'3 = the same as X1; L3 = single bond, O, alkylene; R8, R9 = substituent including (fluoro)hydrocarbyl as the one or both; L'3 = single bond or bivalent linking group]. The compds. may work as hole-transporting host of phosphorescent substances in the layers.
- IT ~~848836-89-5~~  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
 (emitting layers; long-life organic LED containing sp. biphenyl compds. and showing high luminescent efficiency for LCD)
- RN 848836-89-5 HCAPLUS
- CN 9H-Carbazole, 9,9'-(2'',3'-dimethyl[1,1':4',1'':4'',1''':4''''-quaterphenyl])-4,4''''-diylbis- (9CI) (CA INDEX NAME)

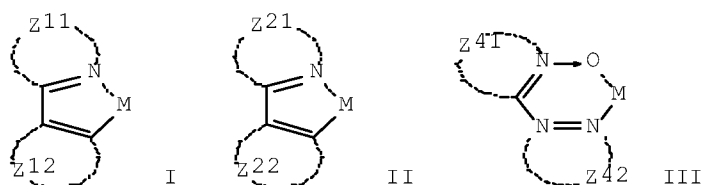


- IC ICM H05B033-14  
 ICS C09K011-06; G02F001-1335; H05B033-22
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 74
- IT ~~848836-89-5~~  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
 (emitting layers; long-life organic LED containing sp. biphenyl compds. and showing high luminescent efficiency for LCD)
- L25 ANSWER 14 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN
- ACCESSION NUMBER: 2004:739385 HCAPLUS [Full-text](#)
- DOCUMENT NUMBER: 141:268179
- TITLE: Long-life white-emitting organic electroluminescent devices, displays, illumination apparatus, and electric appliances therewith
- INVENTOR(S): Fukuda, Mitsuhiro; Genda, Kazuo
- PATENT ASSIGNEE(S): Konica Minolta Holdings, Inc., Japan
- SOURCE: Jpn. Kokai Tokkyo Koho, 577 pp.

DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004253298	A	20040909	JP 2003-43860	20030221
PRIORITY APPLN. INFO.:			JP 2003-43860	20030221
OTHER SOURCE(S):	MARPAT 141:268179			

GI



AB The devices have, in their constituent layers (e.g., emitting layers, hole- or electron-transporting layers), (i) compds. represented by  $X_1R_1C:CR_2X_2$  [ $X_1, X_2$  = aryl, heterocycle;  $R_1, R_2$  = aryl, heterocyclic hydrocarbyl, cycloalkoxy ( $R_1 = R_2$  = aryl)],  $R_{11}R_{12}R_{13}R_{14}R_{15}P$  ( $R_{11}-R_{15}$  = monovalent substituent),  $Ar_2Ar_1C_6H_4(m-Ar_1Ar_2)$  [ $Ar_1$  = bivalent aromatic hydrocarbylene;  $Ar_2$  = (substituted) Ph; H atom on the benzene ring may be substituted with (cyclo)alkyl, alkoxy, or halo],  $Z(ArQ)_n$  [ $Q$  = (substituted) o-(2-pyridyl)phenyl;  $Z$  = n-valent bridging group, single bond;  $Ar$  = bivalent arylene;  $n$  = 2-8], etc., (ii) fluorescent compds. with mol. weight 500-2000 and atomic ratio  $F/(F + H)$  0-0.9 and having fluorescent peak at  $\leq 415$  nm, (iii) polysilanes  $(R_{21}R_{22}Si)_n$  [ $R_{21}, R_{22}$  = alkyl(oxy), aromatic group, aryloxy;  $n_1 \geq 3$ ] or  $[R_{31}(Ar_{31}NR_{32}R_{33})Si]_n$  [ $R_{31}$  = alkyl(oxy), aromatic group, aryloxy;  $R_{32}, R_{33}$  = alkyl, aromatic group;  $Ar_{31}$  = arylene;  $n_2 \geq 3$ ], and/or (iv) fluorescent compds. satisfying atomic ratio  $N/C$  0-0.05. The devices, having phosphorescent dopants I ( $Z_{11}$  = aromatic azacycle;  $Z_{12}$  = nonarom. ring, 5-membered aromatic ring, azulene;  $M$  = metal), II ( $Z_{21}, Z_{22}$  = aromatic azacycle;  $M$  = metal), or III ( $Z_{41}$  = azacycle;  $Z_{42}$  = ring;  $M$  = metal) in emitting layers, are also claimed. The devices exhibit high luminescent efficiency and substantially white emission, and are suited for light source uses, especially of LCD.

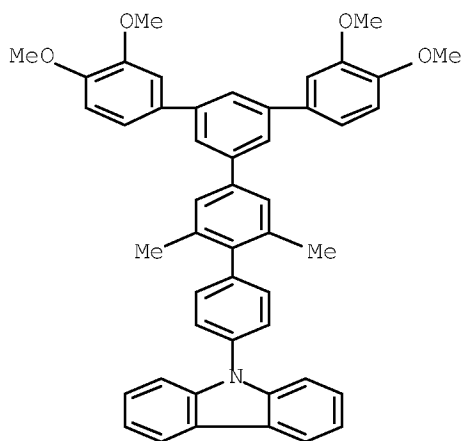
IT 666839-89-0

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

RN 666839-89-0 HCAPLUS

CN 9H-Carbazole, 9-[5'-(3,4-dimethoxyphenyl)-3,4-dimethoxy-3'',5''-dimethyl[1,1':3'',1''':4'',1''''-quaterphenyl]-4''''-yl]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06; G02F001-1335; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 28, 29, 38, 74

IT 71-43-2, Benzene, uses 159-68-2, 9,9'-Spirobi[9H-9-silafluorene]  
346-02-1 752-28-3 1423-70-7 17742-49-3 18822-13-4 20156-53-0  
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# 10/586262

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 754231-92-0 754231-94-2

RL: DEV (Device component use); USES (Uses)

(long-life white-emitting organic LED containing azacyclic phosphorescent dopants and showing high luminescent efficiency)

L25 ANSWER 15 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:180586 HCAPLUS Full-text

DOCUMENT NUMBER: 140:243316

TITLE: Organic electroluminescent device and display

INVENTOR(S): Matsuura, Mitsunobu; Kinoshita, Motoki; Yamada, Taketoshi; Kita, Hiroshi

PATENT ASSIGNEE(S): Konica Minolta Holdings Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 34 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

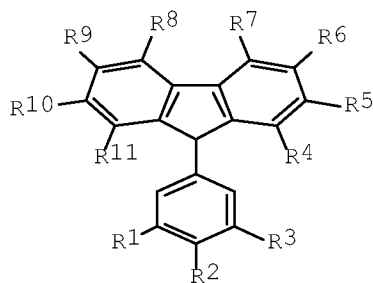
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

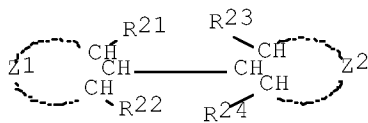
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004071380	A	20040304	JP 2002-229853	20020807
JP 4103491	B2	20080618		
PRIORITY APPLN. INFO.:			JP 2002-229853	20020807
OTHER SOURCE(S):	MARPAT	140:243316		

GI



I



II

AB The invention relates to an organic electroluminescent device, suited for use in making an electroluminescent display, comprising a light-emitting layer containing a phosphorescent substance as a host material and a dopant, wherein

# 10/586262

one of the layer contains the carbazole derivative represented by I [R1-11 = H and substituted groups; at least one of R1-3 is represented by II [Z1 and Z2 = atoms needed to form aromatic rings; R21-24 = H and substituted groups; n = 0 or 1, when n = 0, then one of R23 and R24 is a substituted group, and otherwise, two of R21, R22, R23, and R24 are substituted groups]; R1-3 does not link to from a ring].

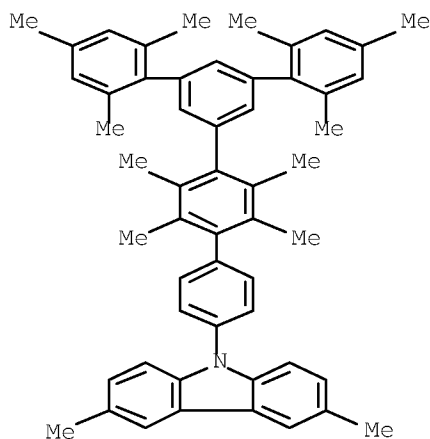
IT 666839-88-9 666839-89-0 666839-90-3  
666839-91-4

RL: DEV (Device component use); USES (Uses)

(carbazole derivative contained in organic electroluminescent device)

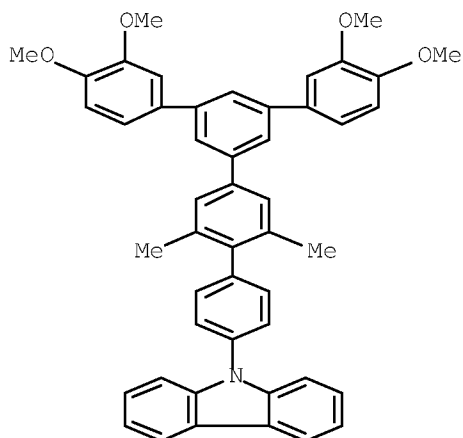
RN 666839-88-9 HCAPLUS

CN 9H-Carbazole, 9-[2,2'',3'',4,5'',6,6''-heptamethyl-5'-(2,4,6-trimethylphenyl)[1,1':3',1'':4'',1'''-quaterphenyl]-4'''-yl]-3,6-dimethyl- (9CI) (CA INDEX NAME)



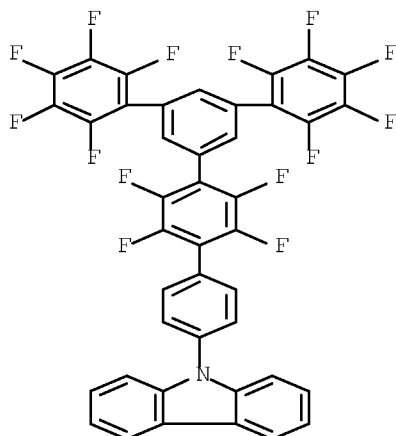
RN 666839-89-0 HCAPLUS

CN 9H-Carbazole, 9-[5'-(3,4-dimethoxyphenyl)-3,4-dimethoxy-3'',5''-dimethyl[1,1':3',1'':4'',1'''-quaterphenyl]-4'''-yl]- (9CI) (CA INDEX NAME)

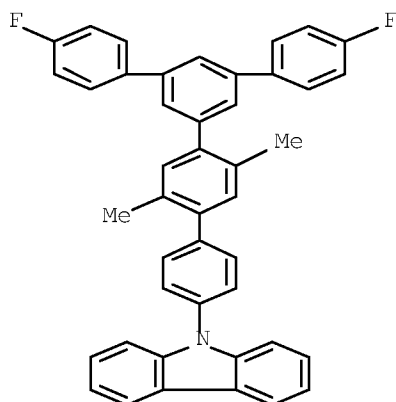


10/586262

RN 666839-90-3 HCAPLUS  
 CN 9H-Carbazole, 9-[2,2'',3,3'',4,5,5'',6,6''-nonafluoro-5'-  
 (pentafluorophenyl)[1,1':3',1'':4'',1'''-quaterphenyl]-4'''-yl]- (9CI)  
 (CA INDEX NAME)



RN 666839-91-4 HCAPLUS  
 CN 9H-Carbazole, 9-[4-fluoro-5'-(4-fluorophenyl)-2'',5''-  
 dimethyl[1,1':3',1'':4'',1'''-quaterphenyl]-4'''-yl]- (9CI) (CA INDEX  
 NAME)



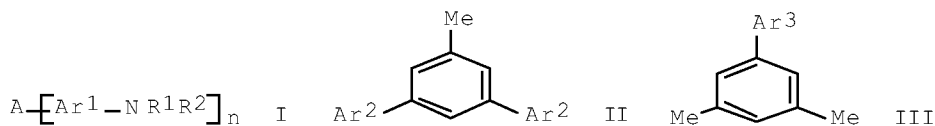
IC ICM H05B033-14  
 ICS C09K011-06  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 74  
 IT 604785-54-8 666839-78-7 666839-79-8 666839-80-1 666839-81-2  
 666839-82-3 666839-83-4 666839-84-5 666839-85-6 666839-86-7  
 666839-87-8 ~~666839-88-9~~ ~~666839-89-0~~  
~~666839-90-3~~ ~~666839-91-4~~ 666839-92-5 666839-93-6  
 666839-94-7  
 RL: DEV (Device component use); USES (Uses)

(carbazole derivative contained in organic electroluminescent device)

L25 ANSWER 16 OF 16 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2000:631876 HCAPLUS Full-text  
 DOCUMENT NUMBER: 133:230365  
 TITLE: Aromatic amino compounds, their preparation, and uses  
 in electroluminescent element or electrophotographic  
 photoreceptor  
 INVENTOR(S): Fujino, Yasumitsu; Ueda, Hideaki; Furukawa, Keiichi  
 PATENT ASSIGNEE(S): Minolta Camera Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 35 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000247932	A	20000912	JP 1999-52513	19990301
PRIORITY APPLN. INFO.:			JP 1999-52513	19990301
OTHER SOURCE(S):	MARPAT 133:230365			

GI



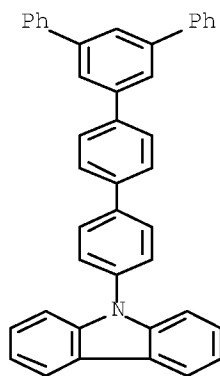
AB The amino compds.  $A(Ar^1NR^1R^2)_n$  [I; A = Q1, Q2; Ar2, Ar3 = (substituted) aryl; Ar1 = (substituted) arylene; R1, R2 = alkyl, aralkyl, (substituted) aryl, (substituted) aromatic heterocyclyl; n = 1, 2] are prepared by reaction of  $A(Ar^1X)_n$  (A, Ar1, n = same as I; X = halo) with  $HNR^1R^2$  (R1, R2 = same as I). I show high charge-transporting ability, luminescence, and durability.

IT 292148-73-3  
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (preparation of aromatic amino compds. for electroluminescent element or electrophotog. photoreceptor)

RN 292148-73-3 HCAPLUS

CN 9H-Carbazole, 9-(5'-phenyl[1,1':3',1'':4'',1'''-quaterphenyl]-4'''-yl)-  
 (9CI) (CA INDEX NAME)





IC ICM C07C211-54  
 ICS C07C211-58; C07D209-86; C07D271-10; C07D279-22; C07D471-06;  
 C09K011-06; G03G005-06; H05B033-14; H05B033-22

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 Section cross-reference(s): 25, 73

IT 212577-33-8 292148-69-7 292148-70-0 292148-71-1 292148-72-2  
~~292148-73-3~~ 292148-75-5 292148-76-6 292148-77-7  
 292148-78-8 292148-79-9 292148-80-2 292148-81-3 292148-82-4  
 292148-83-5 292148-84-6 292148-85-7 292148-86-8 292148-87-9  
 292148-88-0 292148-89-1 292148-90-4 292148-91-5 292148-92-6  
 292148-95-9

RL: DEV (Device component use); PRP (Properties); TEM (Technical or  
 engineered material use); USES (Uses)  
 (preparation of aromatic amino compds. for electroluminescent element or  
 electrophotog. photoreceptor)

10/586262

\*\*\*\*\* SEARCH HISTORY \*\*\*\*\*

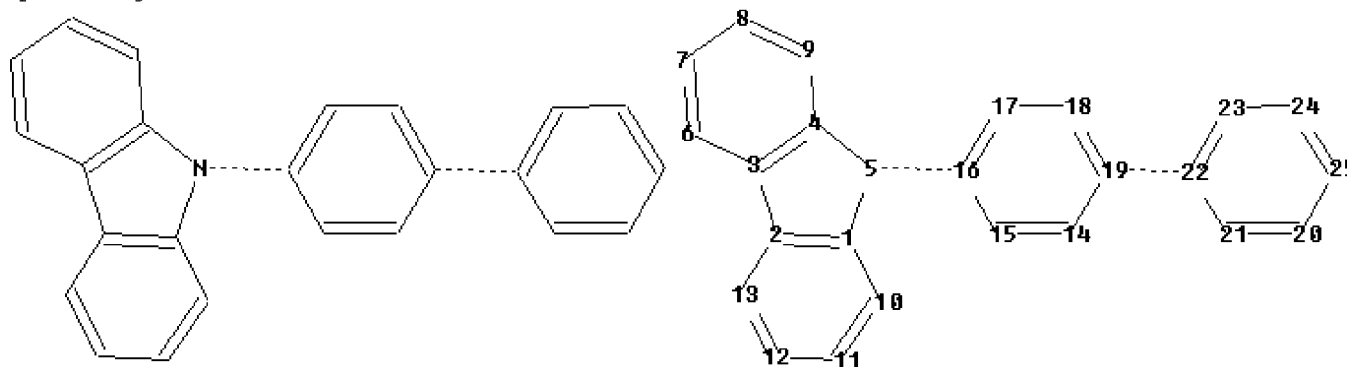
=> d his nofile

(FILE 'HOME' ENTERED AT 09:23:42 ON 23 SEP 2008)

FILE 'REGISTRY' ENTERED AT 09:23:58 ON 23 SEP 2008

L1           STRUCTURE UPLOADED  
          D  
L2           0 SEA SSS SAM L1  
L3           STRUCTURE UPLOADED  
          D

Uploading L2.str



ring nodes :  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23  
24 25  
chain bonds :  
5-16 19-22  
ring bonds :  
1-2 1-5 1-10 2-3 2-13 3-4 3-6 4-5 4-9 6-7 7-8 8-9 10-11 11-12 12-13  
14-15 14-19 15-16 16-17 17-18 18-19 20-21 20-25 21-22 22-23 23-24 24-25  
exact/norm bonds :  
1-5 4-5 5-16 19-22  
exact bonds :  
2-3  
normalized bonds :  
1-2 1-10 2-13 3-4 3-6 4-9 6-7 7-8 8-9 10-11 11-12 12-13 14-15 14-19  
15-16 16-17 17-18 18-19 20-21 20-25 21-22 22-23 23-24 24-25  
isolated ring systems :  
containing 1 : 14 : 20 :

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom  
11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom  
20:Atom 21:Atom  
22:Atom 23:Atom 24:Atom 25:Atom

L4           31 SEA SSS SAM L3

FILE 'HCAPLUS' ENTERED AT 09:26:24 ON 23 SEP 2008

L5           1 SEA ABB=ON PLU=ON US20070116982/PN

FILE 'REGISTRY' ENTERED AT 09:26:47 ON 23 SEP 2008

L6           642 SEA SSS FUL L3  
            SAVE TEMP L6 GAR262REGL2/A

FILE 'STNGUIDE' ENTERED AT 09:30:18 ON 23 SEP 2008

FILE 'REGISTRY' ENTERED AT 09:34:26 ON 23 SEP 2008

L7           STRUCTURE UPLOADED  
            D  
L8           0 SEA SUB=L6 SSS SAM L7  
L9           1 SEA SUB=L6 SSS FUL L7  
            D SCAN  
            SAVE TEMP L9 GAR262REGL3/A

FILE 'HCAPLUS' ENTERED AT 09:37:37 ON 23 SEP 2008

L10          1 SEA ABB=ON PLU=ON L9  
L11          1442 SEA ABB=ON PLU=ON L6  
            D AU L10  
            D SCAN L10  
            D L5 SC  
L12          1274 SEA ABB=ON PLU=ON L11 AND 73/SC,SX

FILE 'STNGUIDE' ENTERED AT 09:42:15 ON 23 SEP 2008

FILE 'REGISTRY' ENTERED AT 09:47:54 ON 23 SEP 2008

L13          32393 SEA ABB=ON PLU=ON TERPHENYL?  
L14          118 SEA ABB=ON PLU=ON L6 AND L13  
L15          611271 SEA ABB=ON PLU=ON BIPHENYL?  
L16          494 SEA ABB=ON PLU=ON L6 AND L15  
L17          601 SEA ABB=ON PLU=ON L14 OR L16  
L18          41 SEA ABB=ON PLU=ON L6 NOT L17

FILE 'HCAPLUS' ENTERED AT 09:51:07 ON 23 SEP 2008

L19          24 SEA ABB=ON PLU=ON L18  
L20          0 SEA ABB=ON PLU=ON L19 AND L5

FILE 'REGISTRY' ENTERED AT 09:52:58 ON 23 SEP 2008

L21          3158 SEA ABB=ON PLU=ON QUATERPHENYL?  
L22          612 SEA ABB=ON PLU=ON L6 NOT L21  
L23          642279 SEA ABB=ON PLU=ON L13 OR L15 OR L22  
L24          19 SEA ABB=ON PLU=ON L6 NOT L23

FILE 'HCAPLUS' ENTERED AT 09:54:18 ON 23 SEP 2008

L25          16 SEA ABB=ON PLU=ON L24  
L26          16 SEA ABB=ON PLU=ON L25 NOT L10  
            SAVE TEMP L26 GAR262HCAP1/A  
            SAVE TEMP L10 GAR262HCAP2/A  
            D QUE L10  
            D L10 IBIB ABS HITSTR HITIND  
            D QUE L25  
            D L25 1-16 IBIB ABS HITSTR HITIND